CLAIMS

WHAT IS CLAIMED:

1. A method of analyzing seismic data, comprising:

determining a portion of the seismic data recorded substantially before the arrival of a seismic signal; and

adding a test signal to the portion of the seismic data recorded substantially before the arrival of the seismic signal.

2. The method of claim 1, wherein determining the portion of the seismic data recorded substantially before the arrival of the seismic signal comprises determining the location of a first break in the seismic data.

3. The method of claim 1, wherein determining the portion of the seismic data comprises determining a portion of the seismic data containing noise and substantially no seismic signal.

4. The method of claim 1, wherein the seismic data is recorded by a seismic sensor having an offset from a seismic source, and wherein determining the portion of the seismic data comprises determining an arrival time of the seismic signal based upon the offset.

5. The method of claim 1, wherein adding the test signal comprises selecting the test signal.

6. The method of claim 5, wherein selecting the test signal comprises selecting the test signal having a range of amplitudes.

7. The method of claim 5, wherein selecting the test signal comprises selecting the test signal corresponding to a range of dips.

8. The method of claim 5, wherein selecting the test signal comprises selecting the test signal corresponding to a range of move out times.

9. The method of claim 1, further comprising processing the seismic data and the added test signal.

10. The method of claim 9, wherein processing the seismic data and the added test signal comprises processing the seismic data and the added test signal using a group forming process.

11. The method of claim 10, wherein processing the seismic data and the added test signal using a group forming process comprises processing the seismic data and the added test signal using a digital group forming process.

12. The method of claim 9, further comprising estimating a signal-to-noise ratio of the processed seismic data using the added test signal.

13. The method of claim 9, further comprising estimating a difference between the processed test signal and the noise.

14. The method of claim 13, wherein estimating the difference comprises comparing the estimated difference to the noise.

15. The method of claim 13, wherein estimating the difference comprises comparing the estimated difference for different processing techniques.

16. The method of claim 15, wherein comparing the estimated difference for different processing techniques comprises comparing the estimated difference for a digital and an analog groupforming process.

17. An article comprising one or more machine-readable storage media containing instructions that when executed enable a computer to:

determine a portion of the seismic data recorded substantially before the arrival of a seismic signal; and

add a test signal to the portion of the seismic data recorded substantially before the arrival of the seismic signal.

18. The article of claim 17, wherein determining the portion of the seismic data recorded substantially before the arrival of the seismic signal comprises determining at least one of a location of a first break in the seismic data and an arrival time of the seismic signal.

19. The article of claim 17, wherein determining the portion of the seismic data comprises determining a portion of the seismic data containing noise and substantially no seismic signal.

20. The article of claim 17, wherein adding the test signal comprises selecting the test signal.

21. The article of claim 20, wherein selecting the test signal comprises selecting the test signal having at least one of a range of amplitudes, a range of dips, and a range of move out times.

22. The article of claim 17, further comprising instructions that when executed enable the computer to process the seismic data and the added test signal.

23. The article of claim 22, wherein processing the seismic data and the added test signal comprises processing the seismic data and the added test signal using a digital group forming process.

24. The article of claim 17, further comprising instructions that when executed enable the computer to estimate a signal-to-noise ratio of the seismic data using the added test signal.

25. An article comprising one or more machine-readable storage media containing data structures and data formed by:

determining a portion of the seismic data recorded substantially before the arrival of a seismic signal; and

adding a test signal to the portion of the seismic data recorded substantially before the arrival of the seismic signal.

26. The article of claim 25, wherein determining the portion of the seismic data recorded substantially before the arrival of the seismic signal comprises determining at least one of a location of a first break in the seismic data and an arrival time of the seismic signal.

27. The article of claim 25, wherein adding the test signal comprises selecting the test signal having at least one of a range of amplitudes, a range of dips, and a range of move out times.

28. The article of claim 25, further comprising data structures and data formed by processing the seismic data and the added test signal.

29. The article of claim 28, wherein processing the seismic data and the added test signal comprises processing the seismic data and the added test signal using a digital group forming process.

30. The article of claim 25, further comprising data structures and data formed by estimating a signal-to-noise ratio of the seismic data after processing the data using the added test signal.